News and Resources from the National Institutes of Health

Kidney Disease
Research Updates

National Kidney and Urologic Diseases Information Clearinghouse Fall 2005

Kidney Disease Awareness Low, Prevalence Remains High

Finding Underscores Importance of Campaign

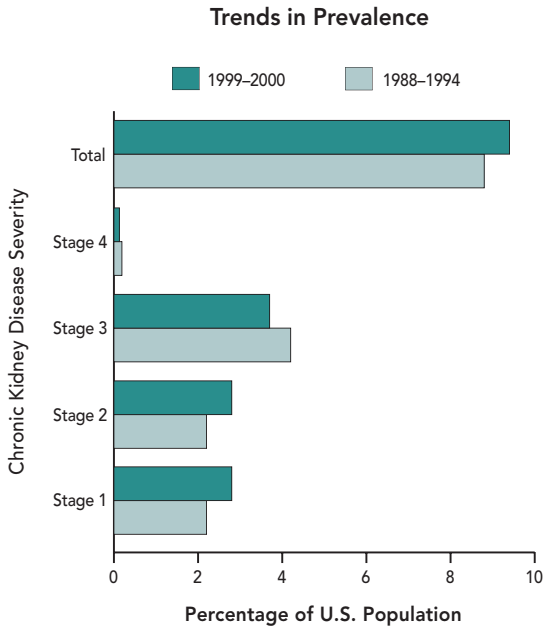
Fewer than one in 10 Americans with poor kidney function are aware of their weak or failing kidneys, according to a new analysis of statistics from the Centers for Disease Control and Prevention, or CDC, and women are significantly less likely to be aware of the problem than men.

The research, part of an examination of data from the 1999 to 2000 National Health and Nutrition Examination Surveys, or NHANES, conducted by the CDC's National Center for Health Statistics, found that the overall rate of chronic kidney disease was 9.4 percent, little changed since it was assessed at 8.8 percent by NHANES in 1988 to 1994 data.

By that estimate, almost 19 million Americans have kidney disease, and the low level of awareness underscores the importance of campaigns to raise awareness, according to Josef Coresh, M.D., Ph.D., the Johns Hopkins Bloomberg School of Public Health professor who led the effort.

Common Terminology

"Clearly, awareness in high-risk populations needs to be addressed and needs to be improved," said Coresh, whose team included other Hopkins researchers and officials from the CDC and the National Institute of Diabetes and Digestive and Kidney Diseases, or NIDDK. Coresh said the low awareness may reflect that researchers have only just begun to agree on common terminology to describe



kidney disease. "With kidney disease we are now probably where we were with hypertension 30 years ago."

The government's Healthy People 2010 program aims for significant drops in the number of

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patients with end-stage renal disease, untreated kidney disease, and the number of patients suffering complications as a result of kidney disease. The authors of the analysis said that their work underscores the importance of awareness and treatment campaigns in meeting the goals.

Emphasis on GFR

Public health officials said physicians can help boost awareness by moving away from reliance on creatinine levels alone to look for kidney disease. While creatinine remains a widely used marker of kidney health, Thomas Hostetter, M.D., an author on the study and the head of the NIDDK's National Kidney Disease Education Program, or NKDEP, said that age, gender, race, and glomerular filtration rate, or GFR, should also be considered when assessing kidney function.

Fewer than one in 10 Americans with poor kidney function are aware of their weak or failing kidneys and women are significantly less likely to be aware of the problem than men.

"This [study] emphasizes that laboratories need to do the GFR calculation," said Hostetter, who suggests use of a GFR calculator on NKDEP's web site: *www.nkdep.nih.gov/healthprofessionals/tools/index.htm*. "A lot of people surveyed never knew that they had a kidney problem."

Difference Between Sexes

The lack of widespread GFR use may also explain why the study found women were significantly less aware of kidney problems than men. The GFR calculation in women is different from the calculation used in men because kidneys in women tend to work at a different rate than in men, and a failure to take sex into account means that women with weak kidneys could be missed in routine screening.

Coresh said his team is interested in tracking the impact of kidney disease because of skyrocketing rates of patients requiring dialysis. The incidence of end-stage renal disease jumped by more than 50 percent between estimates drawn from the 1988 to 1994 data and the 1999 to 2000 numbers. The increase brings the number of Americans requiring a kidney transplant or dialysis to more than 400,000 and the price tag for treating such patients to $25 billion a year.

'Tip of the Iceberg'

"We know that that's only the tip of the iceberg. We've been trying to quantify the impact of the disease in the population at all stages," Coresh said. Though mild to moderate kidney disease was once accorded less attention than when the disease is severe enough to require dialysis or transplantation, he said increasing attention is being paid to the link between kidney disease and other disorders, including anemia and cardiovascular disease.

The research team, writing in the *Journal of the American Society of Nephrology*, said the discrepancy between the little-changed kidney disease incidence and the rapidly growing end-stage renal disease rate was "surprising," suggesting an increase in treatment rates, a higher rate of progression from kidney disease to renal failure, a drop in mortality from other causes, or a combination of these factors.

The study compared data on 4,101 patients surveyed in 1999 and 2000 with information on 15,488 patients collected between 1988 and 1994. ■

Kidney Disease
Research Updates

Kidney Disease Research Updates is published four times a year by the National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC). The newsletter features news about kidney disease, special events, patient and professional meetings, and new publications available from NKUDIC and other organizations.

Subscriptions are free but available only to health professionals. Send subscription inquiries to: National Kidney and Urologic Diseases Information Clearinghouse, 3 Information Way, Bethesda, MD 20892–3580. This publication is available online at: *www.kidney.niddk.nih.gov/about/newsletter.htm*.

Research Updates Gets a New Look, Will Appear More Often

Longtime readers may notice some changes both in the look and content of this issue of *Research Updates*. We have redesigned the publication, putting fresh news from the National Institute of Diabetes and Digestive and Kidney Diseases, or NIDDK, in a new package.

Readers will also be seeing the publication more often. Traditionally published twice a year, we now plan to produce the newsletter quarterly. In addition, we are now publishing two different editions of the newsletter—a kidney version and one focused on urologic diseases.

The front page format has been redesigned to highlight each issue's main topic. The upper, left corner of each page highlights the featured topic.

Research Updates will continue its focus on bringing the latest in NIDDK news and updates from the National Kidney and Urologic Diseases Information Clearinghouse, and we will also be searching for stories about the most interesting people and projects at NIDDK.

Our effort to produce the highest quality, most interesting publication requires the help of our readers. If you know of stories *Research Updates* should be chasing or profiles that it should be running, please contact newsletter writer Brian Reid at 703–902–1302. ■

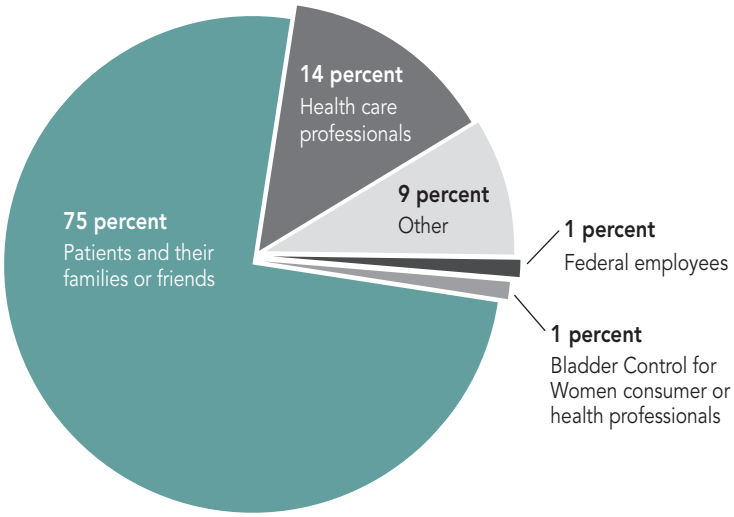
Facts About Inquiry Response January 2004 to December 2004

Clearinghouse Handles More than 6,000 Inquiries, Most from Patients and Families

In 2004, the National Kidney and Urologic Diseases Information Clearinghouse responded to 6,236 inquires.

Amount	Inquiry Method
1,841	telephone calls
1,832	email messages
1,305	online publication orders
846	mailed letters
165	faxes
178	conferences

Most of those inquiries were from patients and their families



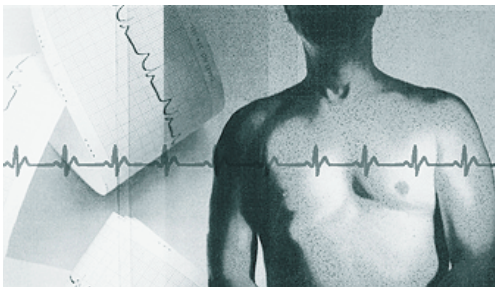
NKDEP Director Hostetter Takes Position at Albert Einstein

Thomas Hostetter, M.D., the director of the National Kidney Disease Education Program at the National Institute of Diabetes and Digestive and Kidney Diseases, or NIDDK, has accepted a position at Albert Einstein College of Medicine in New York City.

NIDDK is looking for a successor to Hostetter, who will continue to serve as director of the education program until that successor is found. ■

Studies Explore Link Between Heart Disease, Kidney Disease

New Research Highlights Risk to Kidney Disease Patients



People with kidney disease are at higher risk than those with normal kidney function for cardiovascular disease, even after controlling for well-known heart risk factors such as diabetes, high blood pressure, and high cholesterol levels, according to two studies published in the *New England Journal of Medicine*.

Those with moderate kidney disease—as measured by a GFR of between 45 and 59—saw an increased risk of death of 17 percent and a 43 percent increased risk of a cardiovascular event.

One study, supported by the National Institute of Diabetes and Digestive and Kidney Diseases, or NIDDK, tracked more than 1 million patients from Kaiser Permanente's renal registry for almost 3 years. The other effort, headed by researchers from Brigham and Women's Hospital in Boston, tracked kidney disease and heart disease deaths in 14,500 patients who had suffered a heart attack.

The Kaiser research showed that patients with low glomerular filtration rate, on GFR, were significantly more likely to die, suffer a cardiovascular event, or be hospitalized than those with more normal kidney function. Those with moderate kidney disease—as measured by a GFR of between 45 and 59—saw an increased risk of death of 17 percent and a 43 percent increased risk of a cardiovascular event. Those with the worst kidney function—as measured by a GFR of less than 15—were 600 percent more likely to die than the other patients.

The other trial, dubbed VALIANT, also found that death rates from cardiovascular disease increased as kidney function decreased, a likely consequence, researchers said, of the complications of kidney disease.

NIDDK continues to examine the link between heart disease and kidney disease. Enrollment in the NIDDK-supported Chronic Renal Insufficiency Cohort, a longitudinal study, began last year with the goal of tracking an ethnically diverse group of patients with mild to moderate kidney disease. About half of the participants will be patients with diabetes.

"They're on target to finish their recruitment next spring or summer," said Thomas H. Hostetter, M.D., the director of the National Kidney Disease Education Program. "The recruitment is going really well for a large trial." ■

Public-Private Effort Targets Heart Patients for Better Kidney Care

A public-private partnership has succeeded in demonstrating the ease of screening people with cardiovascular disease for chronic kidney disease as part of an innovative pilot project at seven Georgia hospitals.

Funded by Centers for Medicare and Medicaid Services and coordinated by the Georgia Medical Care Foundation, or GMCF, with the aid of the National Kidney Disease Education Program, the year-long project showed that adopting glomerular filtration rate, or GFR, as the standard measure of kidney damage was well within the capacity of most hospitals.

Most facilities still evaluate kidney disease using an older measure of kidney function known as serum creatinine, a method that fails to take into account age, race, and sex. The challenge of the Georgia project was to see if hospitals would be able to change their internal processes to use the creatinine levels in combination with demographic details to determine the more-accurate GFR.

"The most gratifying part of the project was realizing how doable that reporting issue was," said William McClellan, the clinical professor at the Emory University School of Medicine who led the effort at GMCF. "Hospitals have the capacity to change their lab reports pretty much at will."

New Initiative Seeks to Boost Imaging of Fibrosis in Liver, Kidney

Effort Relies on Collaboration Between Imaging Specialists, Pathologists

Researchers and clinicians will have improved tools to evaluate renal and hepatic fibrosis if a new initiative to bring together imaging specialists and pathologists by the National Institute of Diabetes and Digestive and Kidney Diseases, or NIDDK, bears fruit.

Spearheaded by Elizabeth Wilder, Ph.D., an NIDDK program director in the Division of Kidney, Urologic, and Hematologic Diseases, the effort is designed to help researchers examine ways to improve current methods of imaging the liver and kidney—such as magnetic resonance imaging—and develop novel technologies.

"We don't really have a clear idea of which imaging options are the best," said Wilder.

To improve the links between the imaging community and the liver and kidney disease specialists, NIDDK hosted a meeting in April 2005 that brought together the two groups for a day of presentations on the pathology of fibrosis and existing and new imaging technologies.

"The nuts and bolts of this project come down to community building."

Elizabeth Wilder, Ph.D.
NIDDK program director, the Division of Kidney, Urologic, and Hematologic Diseases

Range of Options

"Some of the methods that are not now being used in the liver and kidney will be useful," she said, adding that NIDDK hopes to have a range of options to explore, including "some that are good bets and some that are riskier."

Wilder said she expects NIDDK to begin funding projects in the imaging of renal and hepatic fibrosis in 2007. The challenge now, she said, is bringing together the imaging and pathology communities to help develop the kind of research alliances that can push the effort forward.

"We're hoping these collaborations will happen in the next year," she said, adding that NIDDK plans to push those links along by hosting workshop sessions at larger meetings. "The nuts and bolts of this project come down to community building. These kinds of meetings have proven to be very successful."

The imaging project is one of the priorities of NIDDK's translational research initiative (see story page 6), which seeks to bring the findings and technologies of basic research to bear in the clinical realm.

Improving on Biopsy

Tackling the problem of renal and hepatic fibrosis is a particularly high priority because of the importance of fibrosis—the accumulation of scar tissue in an organ—as a marker of severe kidney and liver disease. Assessing fibrosis now is most commonly done via biopsy, an invasive method that can miss evidence of fibrosis.

Instead, researchers would like higher-resolution images of the inside of the organs, technology that could both give a more accurate assessment of the extent of fibrosis and be a tool that could enable earlier detection of problems. But existing imaging modalities, though they can be used in cases of advanced disease, are not sufficiently developed to give useful information about early-stage disease.

Ideally, Wilder said, improved imaging could give clinical researchers an important way of assessing treatments without frequent biopsy or relying on other indicators of organ failure. "This is very important for clinical trials," she said. "A reliable, non-invasive method of detecting fibrosis early and following its progression would make clinical trials much easier." ■

Seven Initiatives Seek to Bridge Basic, Clinical Research

The National Institute of Diabetes and Digestive and Kidney Diseases, or NIDDK, is pushing to improve the ability of researchers to turn breakthroughs in basic science into new patient treatments and tests, focusing its attention on several initiatives designed to promote this translational research.

The effort to boost translational research follows a high-profile 2003 call to action by participants in the Institute of Medicine's Clinical Research Roundtable. Those researchers, writing in the *Journal of the American Medical Association*, said they were worried that scientific breakthroughs "are failing to be translated efficiently into tangible human benefit."

Part of NIH 'Roadmap'

The National Institutes of Health, or NIH, has made promotion of such research a centerpiece of its "Roadmap for Medical Research in the 21st Century," and NIDDK will concentrate its resources in seven areas, including better imaging technologies, better animal models, and a more vigorous search for drugs to treat diseases caused by misformed proteins.

"Concrete initiatives are coming out of this," said Allen Spiegel, M.D., director of NIDDK, who said the effort is designed to help fill "valleys of support" in the research spectrum.

Spiegel acknowledged that the move toward more robust translational research at the NIH would require partnerships with industry, such as pharmaceutical companies, which often foot the bill for later-stage research. "If we are to be successful in translational research, we will have to be extremely thoughtful in how we deal with industry." ■

The Seven Translational Areas

- **Biomarkers:** NIDDK is encouraging researchers to examine new ways to assess disease progression and treatment effects through the use of new tests using blood, tissue, and other samples.
- **Imaging of Solid Abdominal Organs and the Urinary Tract:** Doctors are often frustrated by the lack of reliable noninvasive ways of monitoring digestive, kidney, and urinary health, prompting an effort to find better imaging technology and techniques that will allow physicians a more precise understanding of these diseases.
- **Animal Models:** NIDDK is pushing researchers to work on finding new or improved animal models in an effort to improve the safety and efficacy of the testing of new therapies that must be done before a treatment is offered to humans.
- **Angiogenesis and Diabetes:** Control of angiogenesis—the process by which the body creates new blood vessels—could lead to better understanding of several complications of diabetes, such as wound healing and nerve damage, and research into this process may improve the outcomes of islet transplant in patients with type 1 diabetes.
- **Preventing Oxidative Stress:** Hyperglycemia, or high blood glucose, often causes a buildup of damaging oxygen molecules in a part of the cell called the mitochondria. NIDDK is encouraging researchers to find new ways to halt that process and thereby lessen complications from diabetes.
- **New Therapies Targeting Proteins:** Errors in the way proteins are made and used in the body are responsible for a range of diseases; this effort seeks to find molecules capable of stopping those defects.
- **RNA Interference:** NIH would like researchers to realize the promise of therapies that interfere with messenger RNA molecules responsible for disease processes, an early-stage research effort that has generated many unresolved issues.

Three New Members Join KUH Subcouncil

Three new members have been named to the kidney, urologic, and hematologic subcouncil of the Advisory Council of the National Institute of Diabetes and Digestive and Kidney Disease, or NIDDK. The body serves both to guide the NIDDK's discussion of broad science policy issues and to provide second-level review of funding requests. The new members, who will serve until 2008, are

Janice Lee Arnold, M.D.: A Washington, DC-based urologist in private practice, Arnold specializes in the treatment of urinary incontinence and works to boost funding and awareness of prostate cancer. She serves as president of the National Society of Women in Urology.

William L. Henrich, M.D.: Henrich is the chairman of the Department of Medicine at the University of Maryland School of Medicine in Baltimore and the Theodore E. Woodward Professor at the school. Henrich is a kidney disease expert who also serves as the physician-in-chief at the University of Maryland Hospital in Baltimore.

Members of the NIDDK staff and the KUH subcouncil meet at an Advisory Council meeting earlier this year. Front row (L-R): Janice L. Arnold, M.D., Monica Liebert, Ph.D., T. Debuene Chang, M.D. Back row (L-R): Stuart S. Howards, M.D., John W. Kusek, Ph.D., Leroy M. Nyberg Jr., Ph.D., M.D., Christopher Mullins, Ph.D., Josephine P. Briggs, M.D., and E. Darracott Vaughan Jr., M.D.. Photo credit: NIDDK.

Brian P. Monahan, M.D., FACP: Monahan is a U.S. Navy Captain and a division director at the F. Edward Hébert School of Medicine at the Uniformed Services University of the Health Sciences in Bethesda, MD. Monahan's research focus is on translational research, hematology, and oncology. ■

Upcoming Meetings from NIDDK and the Division of Kidney, Urologic, and Hematologic Diseases

Chronic Pelvic Pain/Chronic Prostatitis Scientific Workshop

October 19–21, 2005
Four Points Sheraton BWI Airport Baltimore, MD

For more information: *www.niddk.nih.gov/fund/other/cpp/index.html*

National Diabetes and Digestive and Kidney Diseases Advisory Council

February 15–16, 2006
Natcher Conference Center, Bethesda, MD

For more information: *www.niddk.nih.gov/fund/divisions/DEA/Council/coundesc.htm*

Urolithiasis Workshop

Spring 2006 (planned)

Nutrient Sensing and Insulin Signaling

Spring 2006 (planned)

National Diabetes and Digestive and Kidney Diseases Advisory Council

May 31–June 1, 2006
Natcher Conference Center, Bethesda, MD

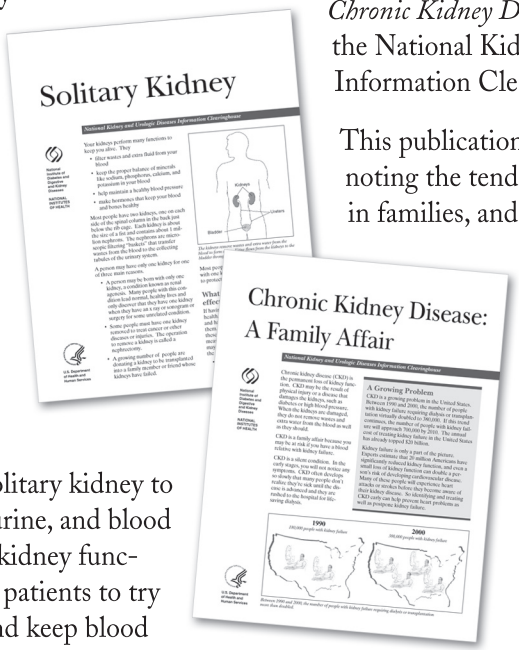
For more information: *www.niddk.nih.gov/fund/divisions/DEA/Council/coundesc.htm*

New Publications

Solitary Kidney

People with only one kidney need to be especially attentive to their kidney care, a task addressed by *Solitary Kidney,* a new publication from the National Kidney and Urologic Diseases Information Clearinghouse.

This fact sheet is designed for people who have only one functioning kidney to cleanse their blood, either because they were born with only one kidney, lost one during surgical treatment for cancer or another disease, or donated one.



The publication details the possibility of high blood pressure, excessive protein in the urine, and reduced kidney function, and it encourages patients with solitary kidney to have their blood pressure, urine, and blood assessed annually to check kidney function. It further encourages patients to try to eat right, avoid injury, and keep blood pressure low.

Chronic Kidney Disease: A Family Affair

Genetics plays a key, though often poorly understood, role in the development of chronic kidney disease. People with a blood relative with kidney disease need to be especially aware of their risk and the importance of screening, which are two of the issues presented in the six-page booklet *Chronic Kidney Disease: A Family Affair* from the National Kidney and Urologic Diseases Information Clearinghouse.

This publication details who is at risk, noting the tendency of the disease to run in families, and highlights the increased risk of certain racial and ethnic groups, among them African Americans, Hispanic Americans, and American Indians and Alaskan Natives. In addition, the booklet covers how doctors can diagnose kidney disease and how, once diagnosed, patients can keep kidney failure at bay. ■

To order, please call 1–800–891–5390 or visit *www.kidney.niddk.nih.gov.*

To order additional copies of this newsletter, or to subscribe to future issues of *Research Updates*, please visit the NIDDK Information Clearinghouses' catalog at *www.catalog.niddk.nih.gov*.

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